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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,031	03/11/2004	Takao Macda	035576/275466	6003

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EXAMINER

WILKINS III, HARRY D

ART UNIT	PAPER NUMBER
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1742

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/798,031

Applicant(s)

MAEDA ET AL.

Examiner

Harry D. Wilkins, III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13,14,16 and 17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13,14,16 and 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/631,491.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Status

1. The previous grounds of rejection have been withdrawn in view of Applicant's remarks regarding the combinability of the teachings of Yanagihara et al and Tsukahara et al.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 13, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagihara et al (JP 60-250557) in view of Moore et al (US 3,598,383).

Yanagihara et al teach (see abstract) making a hydrogen storage alloy that has the general formula $\text{LaNi}_x\text{Co}_y\text{M}_z$. The overall composition has a formula that would make the crystal structure to be of the CaCu_5 type. The alloy was formed by melting (see page 4 of translation provided in parent application). Among the disclosed metals for M, Yanagihara et al expressly disclose that Mg is suitable. The subscript for M, z, is between 0 and 1. Thus, Yanagihara et al disclose adding a small amount of Mg to the melt.

Since Yanagihara et al do not expressly teach an example containing between 0.1 and 1.0 wt% Mg, it is considered that Yanagihara et al do not anticipate claim 13. As such, the Examiner rejects claim 13, based on the fact that it would have been

obvious to one of ordinary skill in the art to have optimized the amount of Mg present in the alloy in order to minimize the battery pressure at the final stage of charging which was the effect of the M element as taught by Yanagihara et al (see page 3 of translation).

Yanagihara et al do not teach using a Mg alloy of the Mg source material.

Moore et al teach (see col. 1, line 65 to col. 2, line 52) that various difficulties were known when trying to add certain metals, such as magnesium, to molten metal that various problems occurred that limited the amount of the added metal that was actually absorbed into the molten metal. Moore et al disclosed that using an inert atmosphere above the molten metal could prevent a large portion of the loss, but still indicate (see col. 3, line 60 to col. 4, line 9) that a Ni-Mg alloy provided better absorption of the Mg to a molten metal than pure Mg lumps.

Therefore, it would have been obvious to one of ordinary skill in the art to have utilized a Ni-Mg alloy as the Mg source material in the process of Yanagihara et al as taught by Moore et al because the Ni-Mg alloy provided more effective absorption of the added Mg into the molten alloy. Since Ni was already a large portion of the composition of Yanagihara et al, Ni would have been an optimum choice for the alloying element with the Mg.

Regarding claim 14, the melt further included Ni and Co. Yanagihara et al teach (see page 4 of translation) that all of the constituents were added to a furnace and melted together. Thus, Yanagihara et al fail to teach adding the Mg after the melt was

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formed. However, a change in the order of adding ingredients has been held to be obvious absent evidence of unexpected results. See MPEP 2144.04.IV.C.

Regarding claim 16, Moore et al suggest (see col. 3, line 60 to col. 4, line 9) using a Ni-Mg alloy to add Mg the melt.

4. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yanagihara et al (JP 60-250557) in view of Moore et al (US 3,598,383) as applied above to claim 13 and further in view of Wada et al (US 5,900,334).

Yanagihara et al disclose melting of the constituents of the alloy, but do not teach that the melting was performed by a high frequency (induction) melting furnace.

Wada et al teach (see abstract) a similar hydrogen storage alloy and that (see col. 5, lines 45-50) that conventional (i.e.-"ordinary") melting of these alloys is performed by a high-frequency induction melting furnace.

Therefore, it would have been obvious to one of ordinary skill in the art to have performed the melting step of Yanagihara et al in a conventional high-frequency induction melting furnace because the induction furnace was more than adequate at melting the alloy composition.

Response to Arguments


5. Applicant's arguments with respect to claims 13, 14 and 16 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D. Wilkins, III whose telephone number is 571-272-1251. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V. King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Harry D Wilkins, III
Primary Examiner
Art Unit 1742

hdw